

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Stigma towards mental illness among medical and nursing students in Singapore: a cross-sectional study
AUTHORS	Chang, Sherilyn; Ong, Hui Lin; Seow, Esmond; Chua, Boon Yiang; Abdin, Edimansyah; Samari, Ellaisha; Teh, Wen Lin; Chong, Siow Ann; Subramaniam, M

VERSION 1 – REVIEW

REVIEWER	Stuart Slavin, MD, Med Saint Louis University, St. Louis, Missouri, USA
REVIEW RETURNED	20-Jun-2017

GENERAL COMMENTS	I think this is an interesting study that effectively explores attitudes and beliefs of Singapore medical and nursing students toward mental illness. I do not have enough statistical training to be certain that the factor analysis is done correctly but my belief is that the study illustrates concerns about some students' beliefs toward patients with mental illness and these findings could help inform future educational interventions to try to enhance student and practitioner attitudes toward the mentally ill.
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REVIEWER	Claire Henderson King's College London, UK
REVIEW RETURNED	06-Jul-2017

GENERAL COMMENTS	<p>The literature covered by the introduction has some gaps. While I agree there are not that many studies of health care students' attitudes, as also pointed out in the systematic review by Yamaguchi et al (Effects of short-term interventions to reduce mental health-related stigma in university or college students: a systematic review.</p> <p>Yamaguchi S, Wu SI, Biswas M, Yate M, Aoki Y, Barley EA, Thornicroft G. J Nerv Ment Dis. 2013 Jun;201(6):490-503. doi: 10.1097/NMD.0b013e31829480df.) there have been some intervention studies in both nursing students (Filmed v. live social contact interventions to reduce stigma: randomised controlled trial. Clement S, van Nieuwenhuizen A, Kassam A, Flach C, Lazarus A, de Castro M, McCrone P, Norman I, Thornicroft G. Br J Psychiatry. 2012 Jul;201(1):57-64. doi: 10.1192/bjp.bp.111.093120. Epub 2011 Dec 8.) and medical students (Friedrich B., Evans-Lacko S., London J., Rhydderch D., Henderson C. & Thornicroft G. Anti-stigma training for medical students - the Education Not Discrimination project.</p>
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	<p>British Journal of Psychiatry, 202 (suppl 55) s89-s94, 2013 and A controlled trial of mental illness related stigma training for medical students. Kassam A, Glozier N, Leese M, Loughran J, Thornicroft G. BMC Med Educ. 2011 Jul 29;11:51. doi: 10.1186/1472-6920-11-51.) Further, the possible reasons for the different results from studies of attitudes in the general population vs health care professionals have been discussed in a review (Henderson C, Noblett J, Parke H, Clement S, Caffrey A, Gale-Grant O, Schulze B, Druss B, and Thornicroft G. Mental health related stigma in health care and mental health care settings. Lancet Psychiatry, 1: 467–82, 2014), suggesting that it is not just the clinical bias that should be considered.</p> <p>Methods</p> <p>I was not clear why the response items were grouped into 3 instead of 5?</p> <p>In general population samples, familiarity with someone with a mental illness has been found to be more strongly associated with attitudes than sociodemographic variables. See eg Henderson C, Robinson E, Evans-Lacko S, Corker E, Rebollo-Mesa I, Rose D and Thornicroft G. Public knowledge, attitudes, social distance and reported contact regarding people with mental illness 2009-2015. Acta Psychiatrica Scandinavica, 134 (Suppl. 446): 23–33, 2016. Was asking this considered?</p> <p>Results</p> <p>It would be good to know what the response rate was. Removal of items reduces comparability with other samples. While I understand the statistical rationale I wonder whether this was the right choice of measure given that it was developed for professionals. As there is at least one scale developed for use in health care students (Kassam A, Glozier N, Leese M, Henderson C & Thornicroft G. Development and responsiveness of a scale to measure clinicians' attitudes to people with mental illness (medical student version). Acta Psychiatrica Scandinavica, 122: 153–161, 2010), could the authors provide more rationale for their choice of measure?</p> <p>From a conceptual point of view item level comparisons are less appropriate than comparisons at the level of whole subscales so I suggest remove these.</p>
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REVIEWER	Dr Zaza Lyons University of Western Australia, Australia
REVIEW RETURNED	25-Jul-2017

GENERAL COMMENTS	<p>1. Overall, this is a well written paper that provides a local perspective (Singapore) into a topic that has been the subject of much research. An important point of difference in this study is the participation of both medical and nursing students which allows for a comparison between the two groups to be made.</p> <p>Introduction</p> <p>2. Page 4, Paragraph 1, line 6 – you need to specify that in this context stigma refers to mental illness.</p>
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	<p>3. Paragraph 1, line 6 – it is somewhat of a generalisation to say that current research is focused on help seeking – it is very large area of research and covers many different aspects – furthermore citing this one paper does not adequately support such a major statement.</p> <p>4. You need to include a definition of stigma at some point in the Introduction.</p> <p>5. Paragraph 2 – I think you need to specify the countries that refs 5 and 6 were conducted in – it is not advisable to compare and generalise results of these studies as stigmatising attitudes vary between countries and cultures. Also, the methods used often differ which may impact on the interpretation of results. Overall, this paragraph presents a rather simplified view of the attitudes of healthcare providers.</p> <p>6. Page 5, line 3 – it is not accurate to say that there are fewer studies of medical students' attitudes to mental illness – it is a very big area of research. It may be the case for nursing students, but the same cannot be said for medical students. Furthermore, (in terms of medical students) the studies usually are either measuring the impact of the psychiatry placement on attitudes, or are a cross sectional measurement of attitudes – which is what your study is doing. It would be more appropriate to describe some of the cross sectional studies here which are of more relevance to your study, rather than impact of placement studies.</p> <p>7. There needs to be more of a link between the first and second paragraphs to adequately set the scene for your study and lead into the aims.</p> <p>8. Paragraph 2 – the information about the OMS-HC does not really belong here – it would be better to move it to the Instruments section on the next page. The focus of your study is to measure healthcare students' attitudes to mental illness, not so much on validating the instrument – that is more of a secondary aim.</p> <p>Method</p> <p>9. Explain how students were invited to participate – did they receive a global email, information through LMS etc. Was there an incentive to participate?</p> <p>10. Include the range of scores, i.e 15-75.</p> <p>Results</p> <p>11. Page 7, Line 56 – how many students were invited to participate? What was the response rate?</p> <p>12. Page 8, line 49 – this subheading should be changed.</p> <p>13. Line 52 – state the range of scores for the 14 items and each subscale. Repeat that a lower score indicates less stigmatising attitude.</p> <p>14. Include the scores for medical students compared with nursing in the text; the same for males and females – not all readers will go the table for this information. Also it is part of the study aims.</p> <p>15. Were there any gender differences?</p> <p>16. Include in the text some of the results that compare students who had undertaken a placement compared with those who had not.</p> <p>Discussion</p> <p>17. Overall the Discussion is well written and adequately discusses the results in the context of previous literature.</p>
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VERSION 1 – AUTHOR RESPONSE

Stuart Slavin (Reviewer 1):

Comment: I think this is an interesting study that effectively explores attitudes and beliefs of Singapore medical and nursing students toward mental illness. I do not have enough statistical training to be certain that the factor analysis is done correctly but my belief is that the study illustrates concerns about some students' beliefs toward patients with mental illness and these findings could help inform future educational interventions to try to enhance student and practitioner attitudes toward the mentally ill.

- Thank you for the comments.

Claire Henderson (Reviewer 2):

Comment: The literature covered by the introduction has some gaps. While I agree there are not that many studies of health care students' attitudes, as also pointed out in the systematic review by Yamaguchi et al (Effects of short-term interventions to reduce mental health-related stigma in university or college students: a systematic review. Yamaguchi S, Wu SI, Biswas M, Yate M, Aoki Y, Barley EA, Thornicroft G. *J Nerv Ment Dis.* 2013 Jun;201(6):490-503. doi: 10.1097/NMD.0b013e31829480df.) there have been some intervention studies in both nursing students (Filmed v. live social contact interventions to reduce stigma: randomised controlled trial. Clement S, van Nieuwenhuizen A, Kassam A, Flach C, Lazarus A, de Castro M, McCrone P, Norman I, Thornicroft G. *Br J Psychiatry.* 2012 Jul;201(1):57-64. doi: 10.1192/bjp.bp.111.093120. Epub 2011 Dec 8.) and medical students (Friedrich B., Evans-Lacko S., London J., Rhydderch D., Henderson C. & Thornicroft G. Anti-stigma training for medical students - the Education Not Discrimination project. *British Journal of Psychiatry,* 202 (suppl 55) s89-s94, 2013 and A controlled trial of mental illness related stigma training for medical students. Kassam A, Glozier N, Leese M, Loughran J, Thornicroft G. *BMC Med Educ.* 2011 Jul 29;11:51. doi: 10.1186/1472-6920-11-51.) Further, the possible reasons for the different results from studies of attitudes in the general population vs health care professionals have been discussed in a review (Henderson C, Noblett J, Parke H, Clement S, Caffrey A, Gale-Grant O, Schulze B, Druss B, and Thornicroft G. Mental health related stigma in health care and mental health care settings. *Lancet Psychiatry,* 1: 467–82, 2014), suggesting that it is not just the clinical bias that should be considered.

- We have expanded the literature covered in the introduction section and have included the references provided by the reviewer.

Methods

I was not clear why the response items were grouped into 3 instead of 5?

- For the purpose of analysis to show a general level of agreement versus disagreement, the response categories were collapsed such that “strongly disagree” and “disagree” responses were grouped as a single “disagree” category, “strongly agree” and “agree” responses were grouped as a single “agree” response outcome, and the “neutral” response group remained as it is. This method of analysis was also used by Reddy et al. (2005) in assessing attitudes towards mental illness among medical students.

Comment: In general population samples, familiarity with someone with a mental illness has been found to be more strongly associated with attitudes than sociodemographic variables. See eg Henderson C, Robinson E, Evans-Lacko S, Corker E, Rebollo-Mesa I, Rose D and Thornicroft G. Public knowledge, attitudes, social distance and reported contact regarding people with mental illness 2009-2015. *Acta Psychiatrica Scandinavica*, 134 (Suppl. 446): 23–33, 2016. Was asking this considered?

- Thank you for the comments. We agree with the reviewer in that having contact with someone with a mental illness plays an important role in influencing their attitudes towards mental illness. In one of the questionnaires in this study, we did assess if the respondent had experience with someone that “has similar problems to X [a person mentioned in a vignette whom displayed symptoms of a psychiatric condition]” or “has friend and family like X”. However as this question did not directly address social contact with a person with mental health problems, and that it was up to the respondent's assessment of what issue the person in the vignette has, therefore the variable of prior social contact was not being examined in the analysis.

Results

It would be good to know what the response rate was.

- We are unable to calculate the response rate as students in the target population from various institutions were notified of the study through mass email or via verbal dissemination of information by staff. We were hence unable to ascertain the number of students approached.

Comment: Removal of items reduces comparability with other samples. While I understand the statistical rationale I wonder whether this was the right choice of measure given that it was developed for professionals. As there is at least one scale developed for use in health care students (Kassam A, Glozier N, Leese M, Henderson C & Thornicroft G. Development and responsiveness of a scale to measure clinicians' attitudes to people with mental illness (medical student version). *Acta Psychiatrica Scandinavica*, 122: 153–161, 2010), could the authors provide more rationale for their choice of measure?

- Though the scale was developed to assess stigma among healthcare professionals, the scale had been validated across various healthcare providers including medical students and nursing students (Modgill et al., 2014). At the conception of the study, we thought there it could be a potential area for comparison given the similar sample population studied, and hence the choice of measure.

Comment: From a conceptual point of view item level comparisons are less appropriate than comparisons at the level of whole subscales so I suggest remove these.

- We felt that comparisons made at the item level provide more depth in understanding stigma between the student groups. We commented on responses of the students at the subscale level, but also highlighted on differences between medical students and nursing students at item level. This had provided additional information which would have been difficult if only subscale comparisons were made.

Dr Zaza Lyons (Reviewer 3):

1. Overall, this is a well written paper that provides a local perspective (Singapore) into a topic that has been the subject of much research. An important point of difference in this study is the participation of both medical and nursing students which allows for a comparison between the two groups to be made.

Introduction

2. Page 4, Paragraph 1, line 6 – you need to specify that in this context stigma refers to mental illness.

Response: We have specified stigma in this context refers to mental illness stigma as suggested by the reviewer.

3. Paragraph 1, line 6 – it is somewhat of a generalisation to say that current research is focused on help seeking – it is very large area of research and covers many different aspects – furthermore citing this one paper does not adequately support such a major statement.

Response: We have added more references with the focus of current stigma research on areas such as public stigma towards individuals with mental illness (Jorm et al., 1999; Subramaniam et al., 2016; Yuan et al., 2016), interventions to reduce mental illness stigma among students (Clement et al., 2012; Moxham et al., 2016; Yamaguchi et al., 2013), and how mental illness stigma would affect help seeking and treatment engagement among patients with mental illness (Brondani et al., 2017; Corrigan et al., 2014).

4. You need to include a definition of stigma at some point in the Introduction.

Response: We have added a definition of stigma as suggested by the reviewer.

5. Paragraph 2 – I think you need to specify the countries that refs 5 and 6 were conducted in – it is not advisable to compare and generalise results of these studies as stigmatising attitudes vary between countries and cultures. Also, the methods used often differ which may impact on the interpretation of results. Overall, this paragraph presents a rather simplified view of the attitudes of healthcare providers.

Response: We agree that it may be difficult to generalise findings across countries due to issues such as methodological differences. We have added the country as suggested by the reviewer.

6. Page 5, line 3 – it is not accurate to say that there are fewer studies of medical students' attitudes to mental illness – it is a very big area of research. It may be the case for nursing students, but the same cannot be said for medical students. Furthermore, (in terms of medical students) the studies usually are either measuring the impact of the psychiatry placement on attitudes, or are a cross sectional measurement of attitudes – which is what your study is doing. It would be more appropriate to describe some of the cross sectional studies here which are of more relevance to your study, rather than impact of placement studies.

Response: We have edited the paragraph by adding more cross sectional studies which discussed measurement of attitudes and removed the paragraph on intervention studies.

7. There needs to be more of a link between the first and second paragraphs to adequately set the scene for your study and lead into the aims.

Response: We have edited the paragraphs as suggested by the reviewer.

8. Paragraph 2 – the information about the OMS-HC does not really belong here – it would be better to move it to the Instruments section on the next page. The focus of your study is to measure healthcare students' attitudes to mental illness, not so much on validating the instrument – that is more of a secondary aim.

Response: As suggested by the reviewer, we have shifted the information about the OMS-HC to the Instruments section.

Method

9. Explain how students were invited to participate – did they receive a global email, information through LMS etc. Was there an incentive to participate?

Response: We have added the information as suggested by the reviewer. Students were invited through school email or verbal dissemination by staff representative during class. Upon completion of the study, students would receive a Starbucks card with monetary value of S\$20.

10. Include the range of scores, i.e 15-75.

Response: We have added the range of scores to the section Methods-Opening Minds Scale for Health Care Providers (OMS-HC).

Results

11. Page 7, Line 56 – how many students were invited to participate? What was the response rate?

Response: All the students in the target population from various institutions were notified of the study through mass email or via verbal dissemination of information by staff. We were hence unable to ascertain the number of students approached and to calculate the response rate.

12. Page 8, line 49 – this subheading should be changed.

Response: Though the reviewer did not provide more specific details as to the reason for a need to change the subheading, we have modified the subheading from “Descriptive of OMS-HC” to “OMS-HC total and subscale scores”.

13. Line 52 – state the range of scores for the 14 items and each subscale. Repeat that a lower score indicates less stigmatising attitude.

Response: We have added the information as suggested by the reviewer.

14. Include the scores for medical students compared with nursing in the text; the same for males and females – not all readers will go the table for this information. Also it is part of the study aims.

Response: We have included the 14-item OMS-HC total scores for medical students and nursing students in the text. However for clarity purpose, we have decided not to include other information within the text and have instead referred readers to Table 1.

15. Were there any gender differences?

Response: There were no gender differences in OMS-HC scores at both univariate and multivariate level.

16. Include in the text some of the results that compare students who had undertaken a placement compared with those who had not.

Response: We have made changes as recommended by the reviewer.

Discussion

17. Overall the Discussion is well written and adequately discusses the results in the context of previous literature.

Response: Thank you for the comment.

Thank you.

Sincerely,
Sherilyn Chang
Research Division
Institute of Mental Health
Singapore

References

Brondani, M. A., Alan, R., & Donnelly, L. (2017). Stigma of addiction and mental illness in healthcare: The case of patients' experiences in dental settings. *PLoS One*, 12(5), e0177388. doi: 10.1371/journal.pone.0177388

Clement, Sarah, van Nieuwenhuizen, Adrienne, Kassam, Aliya, Flach, Clare, Lazarus, Anisha, de Castro, Melanie, . . . Thornicroft, Graham. (2012). Filmed v. live social contact interventions to reduce stigma: randomised controlled trial. *The British journal of psychiatry : the journal of mental science*, 201(1), 57. doi: 10.1192/bjp.bp.111.093120

Corrigan, P. W., Druss, B. G., & Perlick, D. A. (2014). The Impact of Mental Illness Stigma on Seeking and Participating in Mental Health Care. *Psychological Science in the Public Interest*, 15(2), 37-70. doi: 10.1177/1529100614531398

Jorm, A. F., Korten, A. E., Jacomb, P. A., Christensen, H., & Henderson, S. (1999). Attitudes towards people with a mental disorder: a survey of the Australian public and health professionals. *Australian and New Zealand Journal of Psychiatry*, 33(1), 77-83. doi: 10.1046/j.1440-1614.1999.00513.x

Modgill G., Patten S. B., Knaak S., Kassam, A., Szeto, A. C. (2014) Opening Minds Stigma Scale for Health Care Providers (OMS-HC): examination of psychometric properties and responsiveness. *BMC Psychiatry*, 14(1), 120.

Moxham, L., Taylor, E., Patterson, C., Perlman, D., Brighton, R., Sumskis, S., . . . Heffernan, T. (2016). Can a clinical placement influence stigma? An analysis of measures of social distance. *Nurse Education Today*, 44, 170-174. doi: 10.1016/j.nedt.2016.06.003

Reddy, J. P., Tan, S. M., Azmi, M. T., Shaharom, M. H., Rosdinom, R., Maniam, T., . . . Minas, I. H. (2005). The effect of a clinical posting in psychiatry on the attitudes of medical students towards psychiatry and mental illness in a Malaysian medical school. *Ann Acad Med Singapore*, 34(8), 505-510.

Subramaniam, M., Abdin, E., Picco, L., Pang, S., Shafie, S., Vaingankar, J. A., . . . Chong, S. A. (2016). Stigma towards people with mental disorders and its components - a perspective from multi-ethnic Singapore. *Epidemiology and psychiatric sciences*, 1-12. doi: 10.1017/S2045796016000159

Yamaguchi, Sosei, Wu, Shu- I., Biswas, Milly, Yate, Madinah, Aoki, Yuta, Barley, Elizabeth A., & Thornicroft, Graham. (2013). Effects of Short-Term Interventions to Reduce Mental Health–Related Stigma in University or College Students: A Systematic Review. *The Journal of Nervous and Mental Disease*, 201(6), 490-503. doi: 10.1097/NMD.0b013e31829480df

Yuan, Q., Abdin, E., Picco, L., Vaingankar, J. A., Shahwan, S., Jeyagurunathan, A., . . . Subramaniam, M. (2016). Attitudes to Mental Illness and Its Demographic Correlates among General Population in Singapore. *PLoS One*, 11(11), e0167297. doi: 10.1371/journal.pone.0167297

VERSION 2 – REVIEW

REVIEWER	Claire Henderson King's College London, UK
REVIEW RETURNED	09-Oct-2017

GENERAL COMMENTS	I would prefer to see the response rate but have to assume this is not available
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REVIEWER	Dr Zaza Lyons University of Western Australia Australia
REVIEW RETURNED	12-Sep-2017

GENERAL COMMENTS	<p>1. The authors' revisions have greatly improved the paper – well done. I am satisfied that my comments have been adequately addressed. I just have a few more minor points to make.</p> <p>2. There is a paper by Gras and colleagues that would be appropriate to cite in the fourth paragraph of the Introduction – see below for reference.</p> <p>3. Gras et al. Differential stigmatizing attitudes of healthcare professionals towards psychiatry and patients with mental health problems: something to worry about? A pilot study. <i>Soc Psychiatry Psychiatr Epidemiol</i> (2015) 50:299–306.</p> <p>4. Page 27, Paragraph 2, Line 43 – avoid the use of emotive language, e.g 'vast research' instead say 'substantial research' and amend this section slightly, 'conducted with students at an international level'.</p> <p>5. The paper is overly wordy throughout and I think that it would benefit from a careful edit to simplify some of the sentence structure and syntax.</p>
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VERSION 2 – AUTHOR RESPONSE

Reviewer: 3

Reviewer Name: Dr Zaza Lyons

1. The authors' revisions have greatly improved the paper – well done. I am satisfied that my comments have been adequately addressed. I just have a few more minor points to make.
2. There is a paper by Gras and colleagues that would be appropriate to cite in the fourth paragraph of the Introduction – see below for reference.
3. Gras et al. Differential stigmatizing attitudes of healthcare professionals towards psychiatry and patients with mental health problems: something to worry about? A pilot study. Soc Psychiatry Psychiatr Epidemiol (2015) 50:299–306.
4. Page 27, Paragraph 2, Line 43 – avoid the use of emotive language, e.g 'vast research' instead say 'substantial research' and amend this section slightly, 'conducted with students at an international level'.
5. The paper is overly wordy throughout and I think that it would benefit from a careful edit to simplify some of the sentence structure and syntax.

Response: Thank you Dr Lyons for your comments. We have cited Gras et al. (2015) in the Introduction and also in a relevant section in the Discussion. Changes were also made to the wordings as suggested.

We hope our revisions are acceptable and we look forward to a favourable decision.

Thank you.

VERSION 3 – REVIEW

REVIEWER	Dr Zaza Lyons Division of Psychiatry, School of Medicine, University of Western Australia, Australia.
REVIEW RETURNED	03-Nov-2017
GENERAL COMMENTS	I am satisfied that the authors have responded appropriately to my comments on the previous review.